

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Jei-Fu Shaw, et al.
Serial No. : 10/782,287
Filed : February 19, 2004
Title : Starch-Derived Products

Art Unit : 1641
Examiner : Kim, Taeyoon

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF JEI-FU SHAW UNDER 37 C.F.R. § 1.132

I, Guan-Chiun Lee, declare:

1. I am a co-inventor of the subject matter described and claimed in the patent application 10/782,287 (the '287 application), which relates to a method for producing a fermentation product. This method includes a step of growing a microorganism in a glucose-rich syrup without supplementation of other nutrients. This glucose-rich syrup is prepared by a procedure including three steps: (i) treating a starch-containing produce slurry with a thermal-stable α -amylase at a temperature under which protein coagulates, (ii) removing insoluble materials from the α -amylase-treated slurry, and (iii) treating the slurry with a starch hydrolyzing enzyme to produce a glucose-rich syrup.

2. I have reviewed the office action dated December 28, 2009, issued in the '287 application, and understand that the method described above is held unpatentable over Shaw et al., the primary reference, in view of a number of secondary references. Shaw et al., discloses a process of preparing a high-maltose syrup from milled rice. This process includes (i) treating milled rice with a thermal-stable α -amylase at 128 °C to effect heat-coagulation of all of the proteins, (ii) removing the coagulated proteins to obtain a soluble starch hydrolysate, and (iii) treating the starch hydrolysate with β -amylase to produce the high-maltose syrup.

3. I provide reasons below why a skilled person in the pertinent art would not have been motivated to use the high-maltose syrup disclosed in Shaw et al. as is to grow microorganisms.

It is well known in the art that microorganisms require various nutrients (e.g., a nitrogen source, a carbon source, and a mineral source) to grow. Typically, peptides/amino acids are used as nitrogen sources in a microorganism culturing medium.

It is also well known that, in rice, protein is the major nitrogen-containing nutrient and the total amount of other nitrogen-containing nutrients, i.e., B vitamins, is very low. As listed in "Nutrition Facts of Glutinous White Rice," a reference cited by the Examiner, 1 cup (185 g) of white rice contains 13 g protein. It also contains thiamin (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), and vitamin B6 at the amounts of, respectively, 20%, 6%, 20%, and 10% of a human's daily needs. A human needs per day 10-50 mg vitamin B1, 10-50 mg vitamin B2, 25 mg vitamin B3, and 50-200 mg vitamin B6. See www.the-natural-path.com/vitamin-requirement.html; copy attached as Exhibit A. Accordingly, 1 cup of white rice contains at most 10 mg vitamin B1, 3 mg vitamin B2, 5 mg vitamin B3, and 20 mg vitamin B6. Taken together, the total amount of B vitamins in 1 cup of white rice is only 38 mg, which is far lower than the amount of protein in 1 cup of white rice, i.e., 13 g. In other words, the ratio between protein and B vitamins, two nitrogen-containing nutrients in rice, is about 342 : 1.

As pointed out above, the high-maltose syrup taught in Shaw et al. is obtained after removal of protein from milled rice. Clearly, this rice-derived high-maltose syrup is deficient in protein, the major source of amino acids and nitrogen-containing nutrient in rice. As also pointed out above, the total amount of B vitamins (containing nitrogen atoms) is very low in rice, i.e., 38 mg in 185 g rice or around 0.02% by weight. Furthermore, B vitamins are poorer as nitrogen sources than amino acids in terms of utilization for microorganisms. Thus, a skilled artisan would have been discouraged from using the high-maltose syrup disclosed in Shaw et al., with all proteins removed, as is to grow a microorganism, given its lack of sufficient nitrogen-containing nutrients.

4. I hereby declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and

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Client Ref. No.: 09A-911128

that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Date: May 3, 2010

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Daily Mineral and Vitamin Requirement

What is your daily vitamin requirement? Many of us are familiar with the US RDA (Recommended Daily Allowance) of certain nutrients. While the RDA helped to educate people about the various vitamins and minerals they needed, according to Dr. Michael Janson, a leading authority on preventive and alternative medicine "The RDA is actually a useless guideline for today, because it was designed to prevent deficiency diseases such as scurvy and beriberi ... [not for] achieving optimal health and treating disease...". Similar things can be said for the Daily Value (DV) that are referred to on many supplement labels.

I have compiled the following table from various sources. It contains information on a daily mineral and vitamin requirement, based on a 2,000 calorie per day diet, and natural food sources for each nutrient. You can use this to determine what mineral and vitamin supplements you may need, based on your diet. The daily mineral and vitamin requirement range has been derived from various sources. Look at the nutritional content for any supplements you are taking to determine if your supplement is right for you.

Taking a supplement **Ex A** that it fulfills your daily mineral and vitamin requirement **ing** what it needs. The supplement needs to be properly **ing** the body. Although bio-availability is difficult to measure outside of a laboratory, a simple test can weed out obvious problems.

Do your vitamin supplements pass the crumbling and dissolving test? If not, your body may not be getting the benefit of what you are consuming. Drop your vitamin-mineral supplement in a glass of plain water. It should start crumbling in about 30 - 45 minutes and completely dissolve in 4-5 hours. If your supplement does not crumble and dissolve in the specified time, it is a pretty good indication that it will not get absorbed by your body. Consuming vitamins and minerals in a liquid or powder form will help your body better breakdown and absorb their nutritional content, and give you your daily mineral and vitamin requirement. These forms start entering your system in your mouth, as they come in contact with your saliva. The next best option is gelatin-free capsules that easily dissolve in stomach acid. Supplements in hard tablet form - especially time released varieties - are most likely to pass through your system relatively intact.

If you feel you are getting your daily mineral and vitamin requirement and are happy with your supplement, that is great. However, if you are not, I have found a great supplement that is absorbed well in the body, provides the daily recommended mineral and vitamin requirement and also provides some phytonutrients. Here is my recommendation.

Mineral / Vitamin	Helps Support	Daily Mineral or Vitamin Requirement *	Common Natural Sources
Vitamin A	Eyes	5,000 IU	Cod liver oil, egg yolks, butter, raw whole milk, liver
Mixed carotenoids (e.g. beta carotene)	Immune System	5,000 - 15,000 IU	Carrots, pumpkin, sweet potatoes, spinach, butternut squash, tuna, cantaloupe, mangoes, apricots, broccoli, watermelon
Folic Acid	Heart, Brain, red	400 - 800 mcg	Legumes, poultry,

	blood cell development		tuna, wheat germ, mushrooms, oranges, asparagus, broccoli, spinach, bananas, strawberries, cantaloupes
Vitamin B6	Brain, Heart, Immune System, protein metabolism	50 – 200 mg	Fish, soybeans, avocados, lima beans, chicken, bananas, cauliflower, green peppers, potatoes, spinach, raisins
Vitamin B3 (Niacin)	Fat, protein and carbohydrate metabolism, nervous system	25 mg (more in supplement form with medical supervision)	Meats, poultry, fish, peanut butter, legumes, soybeans, whole grains, broccoli, asparagus, baked potatoes
Vitamin B12	Nerves, Blood, tissue growth	50 - 100 mcg	Salmon, eggs, cheese, swordfish, tuna, clams, mussels, oysters
Pantothenic Acid	Energy, protein and carbohydrate metabolism	25 - 150 mg	Fish, whole grain, mushrooms, avocados, broccoli, peanuts, cashews, lentils, soybeans, eggs
Biotin	Hair, Skin, Energy	30 – 300 mcg	Peanut butter, eggs, oatmeal, wheat germ, poultry, cauliflower, nuts, legumes
Vitamin B2 (Riboflavin)	Eyes, cell development, skin	10 – 50 mg	Milk, cottage cheese, avocados, tangerines, prunes, asparagus, broccoli, mushrooms, beef, salmon, turkey
Vitamin B1 (Thiamin)	Energy	10 – 50 mg	Pork, sheat germ, pasta, peanuts, legumes, watermelon, oranges, brown rice, oatmeal, eggs
Vitamin C	Immune System	250 – 2000 mg	Citrus fruit, strawberries, tomatoes, bell peppers, spinach, cabbage, melons, broccoli, kiwi fruit, raspberries
Vitamin D	Bones, calcium absorption	400 – 800 IU	Sunlight, eggs, milk, butter, tuna, salmon
Vitamin E	Heart, Immune system	200 – 400 IU	Nut and vegetable oils, wheat germ, mangoes, blackberries, apples, broccoli, peanuts,

Vitamin K	Blood clotting	20 – 60 mcg	spinach, whole wheat Spinach, broccoli, brussel sprouts, cabbage, parsley, eggs, dairy products, carrots, avocados, tomatoes
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Mineral / Vitamin	Helps Support	Daily Mineral or Vitamin Requirement *	Common Natural Sources
Calcium	Bones, teeth, muscle and nerve function	800 – 1,200 mg	Milk, cheese, yogurt, salmon, sardines with bones, broccoli, green beans, almonds, turnip greens, kale
Magnesium	Blood pressure, nerve and muscle function	400 – 600 mg	Molasses, nuts, spinach, wheat germ, pumpkin seeds, seafood, dairy products, baked potatoes, broccoli, bananas
Selenium	Immune system	100 – 300 mcg	Meats, whole grain, dairy products, fish, shellfish, mushrooms, Brazil nuts
Sodium	Fluid balance, nervous system function	2,400 mg	Salt, processed food, soy sauce (most people will not need to supplement their sodium intake, given the prevalence of sodium in our diets)
Potassium	Acid balance in body, fluid balance (works with sodium)	3,000 – 6,000 mg (from food sources)	Potatoes, avocados, bananas, yogurt, cantaloupe, spinach, mushrooms, milk, tomatoes
Zinc	Immune system, prostate, wound healing	15 – 20 mg	Oysters, lean beef, wheat germ, seafood, lima beans, legumes, nuts, poultry, dairy products
Phosphorus	Energy, bones (teams up with calcium)	800 mg – 1,000 mg	Meats, fish, poultry, eggs, dairy products
Manganese	Blood sugar, energy	2 – 10 mg	Nuts, whole grains, legumes, fea, dried fruits, spinach, green leafy vegetables
Molybdenum	Nitrogen metabolism, energy	25 – 250 mcg	Legumes, meats, whole grains, milk and dairy products
Chloride	Aids digestion, fluid balance (works with sodium)	750 mg	Foods with salt (note most people will not have to supplement

			their chloride intake due to their high salt intake)
Chromium	Carbohydrate metabolism	50 – 200 mcg	Whole grains, broccoli, grapes, oranges, brown sugar, meats, black pepper, brewer's yeast, cheese
Copper	Blood cells, connective tissue formation	1.5 – 3 mg	Oysters, other shellfish, nuts, cherries, cocoa, mushrooms, gelatin, whole grains, eggs, fish, legumes
Flouride	Tooth enamel	1.5 – 4 mg	Flouridated water, fish, tea (most people do not have to supplement their fluoride intake due to fluoridation of the water supply)
Iodine	Proper thyroid function	150 mcg	Spinach, lobster, shrimp, oysters, milk, iodized salt
Iron	Carries oxygen in blood, energy metabolism	10 – 20 mg	Clams, asparagus, meats, chicken, prunes, raisins, spinach, pumpkin seeds, soybeans, tofu

* Based on a diet consisting of 2,000 calories per day. Your daily mineral and vitamin requirement is proportional to your daily calorie intake. For example, if you consume 3,000 calories per day, your daily vitamin requirement is increased by 50%.

*Fulfilling your daily mineral and vitamin requirement is
The Natural Path to good health.*

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